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ABSTRACT

Community college faculty interested in the creative use of computer technology in instruction should know that: (1) there is a wide range of software and hardware which is, or should be, available on campuses; (2) faculty members do not have to be technical experts to make creative use of available resources; (3) computers can provide alternatives to traditional methods of instruction and classroom management; and (5) current technology can make present facility use and teaching more efficient and the classroom more creative. At Genesee Community College four computer/processor labs are available for scheduled classes and individual use. The systems utilize two primary networking capabilities: Learning Information Network (LINK) and Local Area Network (LAN). LINK electronically connects the 25 personal computers in each of the labs. The instructor's computer acts as a central control terminal which can monitor and/or temporarily blank out students' screens. Students can simultaneously receive screen transmissions from the instructor or view the screens of other students on their own terminals. Quick and silent interactions between instructor and student can take place during a class session, and salient examples of student work can be shared with the class. The LAN system gives students individual access to varied programs and instructional materials and is also connected through LINK. Other available resources include DataShow, a system which allows the instructor to project a computer screen onto an overhead screen. The use of such computer resources can be maximized in various ways, including shared lab time for cross-disciplinary instruction, lab sharing for classes with a combined enrollment of under 24 students, and back-to-back class scheduling for team teaching. (GFW)

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CLASSROOM APPLICATIONS of CURRENT TECHNOLOGY:

A Presentation for Twelfth Annual International Conference on Teaching Excellence & Conference of Administrators

by

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This presentation's goal is twofold: first, to share with colleagues a few observations, strategies and experiences related to available technology as it is applied in some of our classes at Genesee Community College; second, to discuss some ways by which to make more efficient use of available computer/processor campus facilities and still get more faculty and administrators involved.

Among other things, we make five assumptions. First, there is a wide range of software and hardware which is available, or which should be available, on campuses, some of which faculty members may not be aware. Second, faculty members who might make creative use of computers/processors may not receive the necessary workshopping to become familiar with those tools. Third, faculty members do **not** have to be programmers or technical experts to make creative use of the available software and hardware. Fourth, computers and/or word processors provide additional ways or alternatives to traditional instructional methods and classroom management. Some of these alternatives significantly alter, as well as enhance, the classroom format. Fifth, current technology can make present computer facility use, and teaching, more efficient, and use of combinations of that technology can make the classroom more creative.

To begin, we need to present skeletally our facility, for it is out of that facility that our goals and assumptions take form. GCC makes available four computer/processor labs, three of which are available for formal scheduled classes, the fourth of which

is open exclusively to independent faculty and student use. Each of these labs houses 25 Zenith (IBM-compatible) PCs, 24 of which are student units, one of which is for instructor use. The PC-to-printer ratio is four-to-one.

Systems and Computer Tech corporation (SCT) installs, maintains, manages and upgrades the computer labs along with many other equipment and computer services within the college, both at the main campus and at satellite sites. SCT gathers statistics to justify facility expansion and software checkouts. Though independently contracted, SCT is part of the college system and intimately aware of instructional, staff and administrative needs. This awareness arises out of the one-building design of the main campus. Additionally, it arises out of two interdisciplinary advisory boards: an Academic Computing Advisory Committee comprising faculty, staff, administrative and SCT representatives, and a similar computer governance committee.

SCT takes deserved credit for installing LINK systems in three of the aforementioned labs. Created by LINK, Inc., the system connects all 25 PCs. Management of the LINK occurs through an electronic control panel set beside the instructor's PC. See figure one.

The LINK provides strategic screen control. With the LINK, an instructor can blank out student screens (CRTs). Further, she can send whatever is on her screen simultaneously to all 24 student screens. Similarly, the instructor can place the text of one student's screen on any or all other students' screens.

Though Jim and I represent different disciplines, we have applied similar LINK strategies in the classroom. For instance, the first two types of screen control mentioned above lend themselves clearly to the enhancement of lecture formats. We have observed that blanking out screens is a most dramatic method of commanding student attention. This must be used humanely, to be sure, and with a sense of humour, usually applied with a warning that such a blanking-out is about to occur. Attention value notwithstanding, this procedure does not affect individual student onscreen text. That is true of any LINK procedure.

As for the second control identified, one can see the value of putting one's lecture notes, an individual graphic, an animated graphic created through macros or a whole storyboarded series of graphics and texts (created with a program such as HARVARD GRAPHICS, which Jim uses frequently, or STORYBOARD, which I use) on each student's screen. Not only outmoding the blackboard with all its inherent problems, this addresses a physical disability such as poor vision. Rather than straining eyes, neck and patience to see a blackboard and to interpret instructor handwriting or handprinting, a student has typed, sometimes animated, text and graphics within inches of her eyes.

We have observed a noticeable increase in students' questions about materials or ideas under study when using this LINK strategy.

LINK use enables instructional spontaneity across the disciplines, for within the lab a teacher can monitor individual

screens. If she sees a particularly good student example illustrating a concept under discussion, for instance, she can say, "Here's something that would be helpful for the rest of you to see" and transfer that screen to all of the other PCs. While neither the instructor nor the students can manipulate the text or appearance of the example screen, they can engage in discussion that under other circumstances might never occur or that might occur only after the instructor has discovered the student's work in the paperstack, xeroxed or dittoed that example, and then distributed it a class or two after it was generated. Similarly, an instructor can address more immediately student comprehension problems.

Here one sees the possible applications for collaborative writing and learning, and for emphasizing the recursive nature of the writing and learning process. Small-group work becomes more flexible when a chosen number of students may consider the same text as it is generated on the spot, whether the text be freewriting, answering of quiz questions, working through of mathematical problems, puzzling upon economics flowcharts, or building nursing case reports. Discussion may lead to immediate rethinking. I have found, for instance, that some technical writing students, as well as comp 101 students, begin to rethink the problems of audience when they realize that their text can be accessible to everyone in the room. It is imperative, though, to court a student's permission to share work. Insensitive, nigh-Orwellian use of LINK strategies could just as easily extinguish student excitement.

Elements of Instruction workshops abound, and LINK makes even more workable the strategies of monitor and adjust. An instructor, with LINK, can monitor silently each student's work within a matter of a minute or two. Where necessary, she can intervene. If she wants to comment, she can write the comment on her screen, transfer that to the student's screen, and solicit response from the student. Within one class, then, she can look in upon, and react to, all 24 students' progress.

Again, this possibility presents implications, not the least of which is the assumption of the instructor's ability to type reasonably quickly. As well, one must be sensitive about the moment of intervention. Certainly it does not do to put a comment on a student's screen when she is in the middle of writing a sentence. This may disrupt the writer's concentration. And, as with all instructional strategies, one should not assume that an instructor will simply sit and read screens for the entire class time. Depending upon personal style, class size and other issues, the instructor may wish to move right from the terminal to the student's side for more personal feedback or interaction.

Class size does become an issue, however, for with a lab of 24 terminals, class registration should ceiling at 24, assuming that the class is scheduled for one meeting per week. A student needs the entire hour to hour and twenty minutes allotted per week for in-class writing, since most of our students use the hunt-and-peck typing method.

SCT has installed a Novell LAN (Local Area Network) in one

of the labs. Thus, the 24 terminals, 25th instructor's terminal, and LAN library computer are connected both through LINK and the LAN. LAN accentuates individualization within the class. LAN makes possible independent use of programs, so that at any given time one student writer may be working with WORDPERFECT, another may opt to work with PROTEUS (a very acceptable electronic pre-writing coach), a third may wish to assess a drafted essay with RIGHTWRITER, and so on. Again, this accessibility and individualization, when layered with mini-lectures and monitor-and-adjust procedures suggested by Elements of Instruction facilitators, emphasize the recursiveness of the writing process.

Additionally, use of LAN provides students with access to instructional materials. During the first LAN session, I place syllabi in the library computer directory. Any student wishing to copy the syllabi to her own floppy disk may do so. All students may do this simultaneously. During each subsequent LAN session, I place electronic copies of any essay guidesheets, as well as copies of my own essays in progress, examples to enhance textbook material, and so on, in the library computer directory. With LAN, students can list files on the library and copy any desired document to their own disks. They may also print hard copies at their discretion. Interestingly, not every student wishes a hard copy. Thus, use of LAN can reduce paper waste.

From the collaborative writing perspective, LAN is exciting for similar reasons. Any student can place an electronic copy of her draft-in-progress in the library computer directory. At an instructor's directive, any and/or all other student writers,

including the instructor, may retrieve an electronic copy of that draft. Students may then manipulate the draft, comment upon it, resave it to the library directory under a new name. The original writer may then access any of these files for revision suggestions. Dr. Nancy Kaplan (sp?) is pioneering such electronic collaborative communication at Cornell, and this application of LAN is based upon what we know of her work.

Through our Media and Library facilities, SCT has provided at least three DataShow overhead projector pads. We have set up carts with a computer/processor and a Datashow in at least two office suites for instructional use. Because of the mounting use of the DataShow, SCT is planning to install three permanent processors in selected classrooms at the college. These processors will be connected, through DataShows, to the SONYpro permanent overhead projector to eliminate the ofttimes complicated logistics of moving equipment carts from one area to another.

Processor-DataShow-overhead combinations provide computer activity and applications outside of the equipped labs. Presenters make frequent use of these at conferences such as NISOD. At GCC, increasing numbers of instructors make use of these as well. A DataShow (which is only one brand of overhead pad), when placed on an overhead projector and connected to a computer/processor, enables the instructor to place on the classroom projector screen anything which appears on her processor. In a different way this outmodes traditional use of the classroom blackboard and changes the dynamics of the class,

for the instructor may sit among the students rather than stand outside them. Together they face the screen. Again, assuming instructor typing skills, one may discuss diverse subjects ranging from sentence structural variation to mathematical problems while sitting among the students. As they suggest alternatives to presented problems in a discipline, I, as instructor, can place these onscreen for immediate discussion and revision much faster than I ever could by standing parallel with the blackboard, trying to give students attention and write on the board at the same time. Both immediacy and spontaneity of instructor-student interplay increase noticeably; students seem more willing to comment when one is among them.

None of the above applications are panaceas. However, they are methods by which to rethink or redesign our methodologies as instructors. Rethinking requires support. We GCC instructors are fortunate to experience this kind of equipment at hand, to be sure, especially given the size of our college. Nonetheless, there are only so many computers available. While probably no institution can claim one hundred percent faculty, staff and administration involvement with technology, there may be ways to improve that involvement. We suggest, and the suggestion is almost certainly not original, that scheduling creativity, management alternatives and planning efficiency may increase the aforesaid involvement and enhance student, as well as institutional, use of the available technology. What follows are six suggestions which we are investigating at GCC.

First, when an instructor plans to use the majority of class

time in lecture format, the instructor could make use of the DataShow pad-computer-overhead projector combination in a non-lab class. By so doing, the instructor could make use of the software packages mentioned above, including innovative packaging of lessons, while at the same time freeing up labspace for a colleague whose class needs individual PCs that session. Of course, the amount of time scheduled between classes might need adjustment so that the instructor would have access to the DataShow-equipped classroom and time to boot the software packages.

Second, labtime could be shared. Cross-disciplinary team instruction could then take place. For instance, an electrical technology class, the members of which are also required to take technical writing, could meet in the lab on a scheduled class day. The instructors would split the time between content discussion and written application of content. At least one of the instructors, preferably both, should be familiar with the software/hardware packages. Again, class size would necessarily be limited to the number of student PCs in the lab.

Third, flexible individual conferencing and labtime sharing could be pursued. Consider: many writing instructors at the college cancel formal class near the first deadline when students may opt to withdraw from a class. While the instructors hold individual 15 minute conferences with each student during the course of a week, the students not in conference at any given time could still use the computer/processor lab. If three English 101 instructors held conferences simultaneously, three

separate timeslots for lab use would be freed for any of those English 101 students. Students from various sections would then have the opportunity to meet and to work together. Of course, this presupposes a fair degree of student confidence with the PCs. At Genesee Community College, SCT provides student lab aids to address rudimentary hardware/software problems, thus accelerating student confidence and independence with the machines.

Fourth, class schedules could be reworked to take up downtime slack. In other words, there are times during any college day when the labs are not being used. At other times, more instructors wish to use the labs than there are labs available. Usage patterns must be observed and documented, and scheduling adjusted, so that more students will be able to use the equipment. Attention to student need must be the priority.

Fifth, two small classes could be scheduled piggyback for labtime sharing. For instance, two classes whose student numbers, in combination, do not exceed 24 could meet in the same lab at the same time. Such an arrangement presumes planning between the two instructors and familiarity with LINK and LAN. When one instructor wishes to address his students, he may LINK with just those students. The other class might be working on independent projects or on a problem assigned by that second instructor. Then the second instructor could have his turn on the LINK to address his class, and so forth. Having participated in such an arrangement for experimental purposes, I concede the inherent difficulties. One must be flexible, directed and not

claustrophobic!

Sixth, classes could be scheduled back-to-back for team teaching. Again, this would involve retooling the class schedule, but that issue needs to be addressed each semester given the explosion of non-traditional students in community college classrooms. One begins to suspect that the non-traditional student is, in terms of enrollment statistics, becoming ever more the tradition in the community college.

Systems such as LINK, LAN (Local Area Network by Novelle), DataShow and others generate enthusiasm in some, but they can intimidate others. Effective use requires expert support and backup. However, these systems may be, and should be, used effectively by willing instructors who realize that curricula must be redesigned or retooled for education in the 1990s. Instructors may find workshops conducted by colleagues more useful/encouraging than those done by "outsiders." And it never ceases to amaze colleagues who have avoided the labs how positive the experience can be.

Having access to technology is not sufficient. As colleagues, we must experiment with that equipment and with variations of instructional and administrative strategies to keep ourselves fresh, to provide our students with a challenging but supportive academic environment, to enjoy an integration of curricula. Dare we say it? We have found that the experiment is fun.

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